

ABSTRACT OF THE DISCLOSURE

A gamma camera having a scintillation detector formed of multiple bar detector modules. The bar detector modules in turn are formed of multiple scintillation crystal bars, each being designed to have physical characteristics, such as light yield, to achieve a sufficient spatial resolution for nuclear medical imaging applications. According to another aspect of the invention, the bar detector modules are arranged in a three-dimensional array, where each module is made up of a two-dimensional array of bar detectors with at least one photosensor optically coupled to each end of the module. Such a camera can be used for both PET (coincidence) and single photon imaging applications. According to another aspect of the invention, a bar detector gamma camera is provided, which utilizes an improved positioning algorithm that greatly enhances spatial resolution in the z-axis direction (i.e., the direction along the length of the scintillation crystal bar).